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#8

a) $f \circ g(x) = f(0) = 5$

c) $g \circ f(2) = g(1) = -3$

e) $g \circ g(1) = g(0) = 1$

#10

a) $g \circ f(1) = g(-1) = 3$

b) $g \circ f(5) = g(1) = 4$

c) $f \circ g(0) = f(5) = 1$

d) $f \circ g(4) = f(2) = -2$

#16. $f(x) = \sqrt{x+1}$ $g(x) = 3x$

$$f \circ g(x) = \sqrt{3x+1}$$

$$f \circ g(4) = \sqrt{3 \cdot 4 + 1} = \sqrt{13}$$

$$g \circ f(x) = 3\sqrt{x+1}$$

$$g \circ f(2) = 3\sqrt{2+1} = 3\sqrt{3}$$

$$f(f(x)) = \sqrt{\sqrt{x+1} + 1}$$

$$f \circ f(1) = \sqrt{\sqrt{1+1} + 1} = \sqrt{1+1}$$

$$g(g(x)) = 3(3x) = 9x$$

$$g \circ g(0) = 9 \cdot 0 = 0$$

#22

$$f(x) = \frac{1}{x+3} \quad g(x) = -\frac{2}{x}$$

$$f \circ g(x) = \frac{1}{-\frac{2}{x} + 3}$$

$$-\frac{2}{x} \rightarrow x \neq 0$$

$$-\frac{2}{x} + 3 \neq 0$$

$$-\frac{2}{x} = -\frac{3}{1}$$

$$x = \frac{-2}{-3} = \frac{2}{3}$$

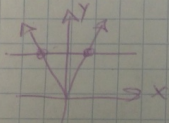
$$D: \left\{ x / x \neq 0, \frac{2}{3} \right\}$$

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10 yes, it's one-one b/c each input has a unique output

13. no, it's not one-one, b/c 2 and -3 have the same output.

19 doesn't pass horizontal test \Rightarrow not one-one

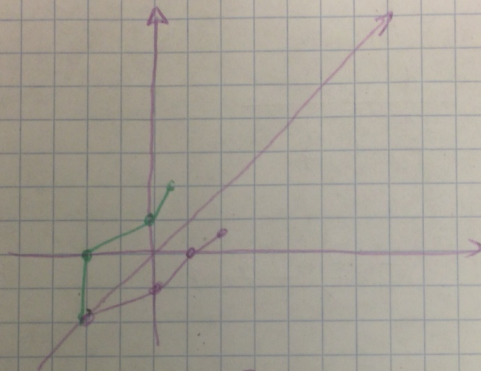


28 $f^{-1}: \{(2, -2), (6, -1), (8, 0), (-3, 1), (9, 2)\}$

D: $\{2, 6, 8, 9\}$

R: $\{-2, -1, 0, 1, 2\}$

42



51

$$y = x^3 - 1$$

$$x = y^3 - 1$$

$$x + 1 = y^3$$

$$y = \sqrt[3]{x+1}$$